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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,989	02/09/2004	Bryan P. Dube	EH-10907(04-100)	9587

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BACHMAN & LAPOINTE, P.C.  
900 CHAPEL STREET  
SUITE 1201  
NEW HAVEN, CT 06510

EXAMINER

WHITE, DWAYNE J

ART UNIT PAPER NUMBER

3745

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

②

## Office Action Summary

Application No.

10/774,989

Applicant(s)

DUBE ET AL.

Examiner

Dwayne J. White

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/9/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 3, 6, 7, 9-11, 13, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson et al. (6,416,283). Johnson et al. discloses a turbine blade comprising: an airfoil having a root end and a tip end; at least one cooling passageway 16 extending from the root to the tip and having a circular cross section; a plurality of turbulation promotion devices 30 in the cooling passage way being arcuate in shape and circumscribing an arc less than 180 degrees. The plurality of turbulation promotion devices includes a pair of aligned devices and end portions of the first one of the pair being spaced from the end portion of the second one of the pair (See Figure 5). The turbulation promotion devices are trip strips and have a surface that is normal to the axis extending from the tip to the root of the cooling fluid flow passage.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. Johnson et al. discloses all of the claimed subject matter including a plurality of gaps between the end portions of the trip strips. Johnson et al. does not disclose a specific range for the gap.

Since applicant has not disclosed that having the gaps of the specific dimensions solves any stated problem or is for any particular purpose above the fact that the gaps increase heat transfer and it appears that the trip strips of Johnson et al. would perform equally well with having the dimensions as claimed by applicant, it would have been an obvious matter of design choice to modify the trip strips of Johnson by utilizing the specific and dimensions as claimed for the purpose of increasing heat transfer.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. in view of Butts (5,232,343). Johnson et al. discloses all of the claimed subject matter except a specific height to diameter ( $e/D$ ) ratio.

Butts teaches turbulators having an  $e/D$  ratio of 0.07 to .333 (Column 4, lines 9-45). Since both Johnson et al. and Butts disclose cooled turbine engine blades with turbulators, it would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the turbulators of Johnson et al, with the teachings of Butts, by having a ratio as claimed for the purpose of improving the cooling properties of the cooling passageway.

Claims 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. in view of Merry (6,672,836). Johnson et al. discloses all of the claimed subject matter except a specific range for a pitch to height ( $P/e$ ) ratio and the turbulation promotion devices having a angled surface of a specific range.

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Merry teaches having a P/e ratio lying within the range of 5-20 and trip strips having angled surfaces (Figure 3). Since both Johnson et al. and Merry disclose cooled turbine blades having trip strips, it would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the trip strips of Johnson et al., with the teaches of Merry, by using a P/e ratio as claimed and angling the trips strips for the purpose of improving the cooling passageways cooling properties.

Further, since applicant has not disclosed that having the trip strips at a specific angle solves any stated problem or is for any particular purpose above the fact that the angle improves cooling properties and it appears that the trip strips of Johnson et al. as modified would perform equally well with the angles as claimed by applicant, it would have been an obvious matter of design choice to further modify the trip strips of Johnson et al. by utilizing the specific angels as claimed for the purpose of improving the cooling properties of the cooling passageway.

Claims 12, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. in view of Wei et al. (6,234,752). Johnson et al. discloses all of the claimed subject matter except for having the first set of turbulators off set from the second set of turbulators.

Wei et al. teaches turbulence promotion devices made by the same process as the devices of Johnson et al. wherein the device pattern has the turbulence promotion devices offset from one another. Since both Johnson et al. and Wei et al. disclose similar cooling passageways and similar processes of manufacture, it would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the devices of Johnson et al., with the teaches of Wei

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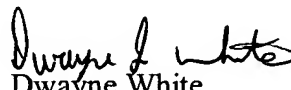
et al., by offsetting the sets of turbulators for the purpose of modifying the cooling properties of the cooling passageways.

***Contact Information***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwayne J. White whose telephone number is (571) 272-4825. The examiner can normally be reached on 7:30 am to 5 pm T-F and alternate Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Dwayne White  
Patent Examiner  
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6/11/05